

REMARKS

Claims 1 to 19, 26 to 34, 38, 39, 40, and 67 to 72 have been canceled. Claims 41 to 66 and 81 to 94 have been withdrawn from consideration. Claims 20 to 25, 35 to 37, 73 to 80, and new claims 95 to 97 remain under consideration. New claims 95 to 97 are drawn to the elected invention of Group II.

A restriction requirement has been made between the following inventions:

- I. Claims 1-19 and 67-72, drawn to a burn through and flame propagation resistant laminate;
- II. Claims 20-40 and 73-80, drawn to a burn through and flame propagation resistant insulation system;
- III. Claims 41-44, 81-84, and 93-94 drawn to a burn through and flame propagation resistant insulation system in the fuselage of an aircraft; and
- IV. Claims 45-66 and 85-92 drawn to a burn through and flame propagation resistant insulation system.

Applicants hereby affirm the election made on April 7, 2005 to prosecute the invention of Group II, claims 20-40 and 73-80 plus new claims 95 to 97, which are drawn to the elected invention of Group II. This election is made without traverse.

Claims 20, 21, 23, and 24 have been rejected under 35 U.S.C. 102(e) as being anticipated by Forsten et al. (US Patent No. 6,312,561).

Forsten et al disclose a flame barrier paper 24 that includes aramid fibrils, floc, and 40 to 70 weight percent mica. Forsten et al also disclose: treating the flame barrier paper 24 with a fluoropolymer coating having a weight between 0.5 and 5 g/m² to form a moisture blocking layer on the sheet; adhering the flame barrier paper 24 to bagging film 25 (preferably, a polyester, polyvinyl fluoride, or polyimide film) which increases the tear

resistance of the flame barrier paper 24; and using the bagging film with a sound or thermal insulative material such as glass wool or aramid batting.

Claim 20, as currently amended, defines a burn through and flame propagation resistant insulation system that includes:

a burn through and flame propagation resistant laminated sheet; the laminated sheet including a sheet of burn through and flame propagation resistant paper comprising: aramid fibers, mica flakes, and aramid fibril binder; and a first sheet of a water vapor transmission and flame propagation resistant polyvinylfluoride or polyimide film from 0.2 to 1.0 mils thick and weighing between 20 and 50 g/m²; the polyvinylfluoride or polyimide film having a water vapor permeability of 4.0 perms or less and a first major surface bonded to a first major surface of the sheet of burn through and flame propagation resistant paper;

a layer of lightweight, flexible, thermal and acoustical insulation material; the layer of insulation material having first and second major surfaces; and

the laminated sheet overlaying a major surface of the layer of insulation material with the sheet of burn through and flame propagation resistant paper being between the polyvinylfluoride or polyimide film of the laminated sheet and the layer of insulation material to restrict the transmission of water vapor into the burn through and flame propagation resistant paper of the laminated sheet to better preserve the integrity of the burn through and flame propagation resistant paper of the laminated sheet.

Forsten et al does not disclose or suggest an insulation system as set forth in claim 20 and the claims depending therefrom wherein a burn through and flame propagation resistant laminated sheet overlays a major surface of a layer of insulation material with the sheet of burn through and flame propagation resistant paper of the laminated sheet being located between a polyvinylfluoride or polyimide film of the laminated sheet (a polyvinylfluoride or polyimide sheet from 0.2 to 1.0 mils thick, weighing between 20 and 50 g/m², and having a water vapor permeability of 4.0 perms or less) and the layer

of insulation material to restrict the transmission of water vapor into the burn through and flame propagation resistant paper of the laminated sheet to preserve the integrity of the burn through and flame propagation resistant paper of the laminated sheet. Forsten et al merely disclose adhering their flame barrier paper 24 to bagging film 25, which increases the tear resistance of the flame barrier paper 24, but does not disclose or suggest utilizing the bagging film 25 as a moisture barrier to restrict the transmission of water vapor into their flame barrier paper 24 by locating the flame barrier paper between the bagging film and the insulation. In view of the amendments to claim 20 and for the reasons discussed above, the withdrawal of the rejection of claims 20, 21, 23, and 24 under 35 U.S.C. 102(e) as being anticipated by Forsten et al is solicited and the allowance of claims 20, 21, 23, and 24 is requested.

Claims 25 to 27, 73, 74, and 79 have been rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Forsten et al. (US Patent No. 6,312,561).

Claims 26 and 27 have been canceled. Claim 25 depends from claim 20 and is patentable over Forsten et al for the same reasons discussed above in connection with claim 20. Forsten et al does not disclose or suggest an insulation system as set forth in claim 25 wherein a burn through and flame propagation resistant laminated sheet overlays a major surface of a layer of insulation material with the sheet of burn through and flame propagation resistant paper of the laminated sheet being located between a polyvinylfluoride or polyimide film of the laminated sheet having a water vapor permeability of 4.0 or less, let alone 2.5 perms or less as set forth in claim 25, and the layer of insulation material to restrict the transmission of water vapor into the burn through and flame propagation resistant paper of the laminated sheet to better preserve the integrity of the burn through and flame propagation resistant paper of the laminated sheet.

Claim 73, as currently amended, and the claims depending therefrom defines a

burn through, flame propagation and water vapor transmission resistant insulation system comprising:

a burn through, flame propagation and water vapor transmission resistant sheet consisting of: a sheet of burn through and flame propagation resistant paper having first and second major surfaces and comprising: aramid fibers, mica flakes, and aramid fibril binder; the sheet of burn through and flame propagation resistant paper having the first major surface treated with a heat sealable, moisture and flame propagation resistant polyvinylfluoride water based emulsion coating and having a water vapor permeability of 4.0 perms or less;

a layer of lightweight, flexible, thermal and acoustical insulation material; the layer of insulation material having first and second major surfaces; and

the burn through, flame propagation and water vapor transmission resistant sheet overlaying a major surface of the layer of insulation material with the treated first major surface of the burn through, flame propagation and water vapor transmission resistant sheet being an outer surface of the burn through, flame propagation and water vapor transmission resistant sheet to restrict the transmission of water vapor into the burn through, flame propagation and water vapor transmission resistant sheet to preserve the integrity of the burn through and flame propagation resistant paper of the burn through, flame propagation and water vapor transmission resistant sheet.

Forsten et al does not disclose or suggest an insulation system as set forth in claim 73 and the claims depending therefrom wherein a burn through, flame propagation and water vapor transmission resistant sheet, having a water vapor permeability of 4.0 perms or less, overlays a major surface of a layer of insulation material with a first major surface of the burn through, flame propagation and water vapor transmission resistant sheet, which is treated with a heat sealable, moisture and flame propagation resistant polyvinylfluoride water based emulsion coating, is an outer surface of the burn through,

flame propagation and water vapor transmission resistant sheet to restrict the transmission of water vapor into the burn through, flame propagation and water vapor transmission resistant sheet to preserve the integrity of the burn through and flame propagation resistant paper of the burn through, flame propagation and water vapor transmission resistant sheet. In view of the amendments to claim 25 and claim 20 from which claim 25 depends and in view of the amendments to claim 73 and for the reasons discussed above, the withdrawal of the rejection of claims 25, 73, 74, and 79 under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Forsten et al is solicited and the allowance of claims 25, 73, 74, and 79 is requested.

With regard to the rejection of claims 28, 29, 31, and 33 under 35 U.S.C. 103(a) as being obvious over Forsten et al. (US Patent No. 6,312,561), claims 28, 29, 31, and 33 have been canceled.

Claims 75 has been rejected under 35 U.S.C. 103(a) as being obvious over Forsten et al. (US Patent No. 6,312,561). Claim 75 depends from claim 73 and is patentable over Forsten et al for the same reasons discussed above in connection with claim 73. In addition, claim 75 defines a burn through, flame propagation and water vapor transmission resistant sheet wherein the polyvinylfluoride coating, by dry weight, is between 20 and 100 g/m². The weight of the flame barrier composition of Forsten et al is between 100 and 500 g/m² and the weight of the fluoropolymer coating of Forsten et al is 0.5 to 1.0 weight percent of the total weight of the coated composition (col. 2 lines 39 to 57) or .5 g/m² to 5 g/m². Thus, Forsten et al teaches the use of a fluoropolymer coating well outside the range of the polyvinylfluoride coating used in the burn through, flame propagation and water vapor transmission resistant sheet of the subject invention. In view the amendments to claim 73 and for the reasons discussed above in connection with claim 75 and the rejection of claim 73, the withdrawal of the rejection of claims 75

under 35 U.S.C. 103(a) as obvious over Forsten et al is solicited and the allowance of claim 75 is requested.

Claims 35 to 40 have been rejected under 35 U.S.C. 103(a) as obvious over Forsten et al. (US Patent No. 6,312,561).

Claims 38 to 40 have been canceled. Claims 35 to 37 depend from claim 20 and are patentable over Forsten et al for the same reasons discussed above in connection with claim 20. Forsten et al does not disclose or suggest an insulation system as set forth in claim 20 and depending claims 35 to 37 wherein a burn through and flame propagation resistant laminated sheet overlays a major surface of a layer of insulation material with the sheet of burn through and flame propagation resistant paper of the laminated sheet being located between a polyvinylfluoride or polyimide film of the laminated sheet having a water vapor permeability of 4.0 perms or less and the layer of insulation material to restrict the transmission of water vapor into the burn through and flame propagation resistant paper of the laminated sheet to preserve the integrity of the burn through and flame propagation resistant paper of the laminated sheet or a laminated sheet wherein the paper is sandwiched between two layers of polymeric film as set forth in claims 35 to 37. In view the amendments to claim 20 and for the reasons discussed above in connection with the rejections of claims 20 and 35, the withdrawal of the rejection of claims 35 to 37 under 35 U.S.C. 103(a) as obvious over Forsten et al is solicited and the allowance of claims 35 to 37 is requested.

Claims 22 and 80 have been rejected under 35 U.S.C. 103(a) as being obvious over Forsten et al. (US Patent No. 6,312,561) in view of Hill et al. (US Patent No. 4,874,648). Hill et al disclose the use of a polyimide foam insulation, but does not otherwise supplement the disclosure of Forsten et al. Claim 22 is patentable over Forsten et al and Hill et al for the same reasons discussed above in connection with the rejection of currently amended claim 20. Accordingly, in view the amendments to claim

20 and for the reasons discussed above in connection with the rejections of claim 20, the withdrawal of the rejection of claim 22 under 35 U.S.C. 103(a) as obvious over Forsten et al in view of Hill et al is solicited and the allowance of claim 22 is requested. Claim 80 is patentable over Forsten et al and Hill et al for the same reasons discussed above in connection with the rejection of currently amended claim 73. Accordingly, in view the amendments to claim 73 and for the reasons discussed above in connection with the rejections of claim 73, the withdrawal of the rejection of claim 80 under 35 U.S.C. 103(a) as obvious over Forsten et al in view of Hill et al is solicited and the allowance of claim 80 is requested.

Claims 30, 32, 34, 76, and 77 have been rejected under 35 U.S.C. 103(a) as being obvious over Forsten et al. (US Patent No. 6,312,561) in view of Eddy (US Patent No. 5,788,184).

Forsten et al disclose a flame barrier paper 24 that includes aramid fibrils, floc, and 40 to 70 weight percent mica. Forsten et al also disclose: treating the flame barrier paper 24 with a fluoropolymer coating to form a moisture blocking layer on the sheet; adhering the flame barrier paper 24 to bagging film 25 (preferably, a polyester, polyvinyl fluoride, or polyimide film) which increases the tear resistance of the flame barrier paper 24; and using the bagging film with a sound or thermal insulative material such as glass wool or aramid batting.

Eddy discloses an insulation blanket overlaid by a laminate that has an outer polymeric film 52, a thermal and acoustical insulation material 56, and a reinforcing scrim embedded in the insulation material 56 to secure the scrim to the polymeric film.

Claims 30, 32, and 34 have been canceled.

Claim 76 has been amended.

Claim 76, as currently amended, defines a burn through, flame propagation and water vapor transmission resistant insulation system with a burn through, flame

propagation and water vapor transmission resistant sheet. The burn through, flame propagation and water vapor transmission resistant sheet consists of: a sheet of burn through and flame propagation resistant paper having first and second major surfaces and comprising: aramid fibers, mica flakes, and aramid fibril binder; the sheet of burn through and flame propagation resistant paper having the first major surface treated with a heat sealable, moisture and flame propagation resistant polyvinylfluoride water based emulsion coating and having a water vapor permeability of 4.0 perms or less; and a sheet of reinforcing scrim bonded to one of the major surfaces of the sheet of burn through and flame propagation resistant paper to increase the puncture and tear resistance of the burn through, flame propagation and water vapor transmission resistant sheet. Unlike Eddy, there is no polymeric film in this laminate. In this embodiment of the subject invention, the heat sealable, moisture and flame propagation resistant polyvinylfluoride water based emulsion coating on the first major surface of burn through barrier paper restricts the transmission of water vapor into the burn through barrier paper. Unlike Forsten et al, the burn through, flame propagation and water vapor transmission resistant sheet is not adhered to a bagging film for reinforcement. The burn through, flame propagation and water vapor transmission resistant sheet is reinforced by a scrim bonded to one of the major surfaces of the burn through and flame propagation resistant paper. Claim 77 further defines the subject invention over Forsten et al and Eddy by utilizing the heat sealable, moisture and flame propagation resistant polyvinylfluoride water based emulsion coating, which has a dry weight between 20 and 100 g/m², to bond the scrim to the paper.

The burn through, flame propagation and water vapor transmission resistant insulation system as set forth in claim 76 and the claims depending therefrom also includes: a layer of lightweight, flexible, thermal and acoustical insulation material which has first and second major surfaces; and the burn through, flame propagation and water vapor

transmission resistant sheet overlays a major surface of the layer of insulation material with the treated first major surface of the burn through, flame propagation and water vapor transmission resistant sheet being an outer surface of the burn through, flame propagation and water vapor transmission resistant sheet to restrict the transmission of water vapor into the burn through, flame propagation and water vapor transmission resistant sheet to preserve the integrity of the burn through and flame propagation resistant paper of the burn through, flame propagation and water vapor transmission resistant sheet. Neither Forsten et al nor Eddy disclose or suggest this structure.

New claims 95 to 97 depend from claim 76. In view the amendments to claims 76 and 77 and for the reasons discussed above in connection with the rejection of claims 76 and 77, the withdrawal of the rejection of claims 76 and 77 under 35 U.S.C. 103(a) as obvious over Forsten et al in view of Eddy is solicited and the allowance of claims 76, 77, and 95 to 97 is requested.

Respectfully submitted,


Attorney for Applicants

John D. Lister
Registration No. 23,004
(480) 641-7459